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AMENDED PATENT
APPLICATION

APPLICATION FOR UNITED STATES PATENT

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TITLE: "THE GRIPWHEEL DRIVER HANDLE ASSEMBLY
AND METHOD OF ATTACHMENT
TO OBTAIN UNIQUE PROPERTIES "



GRIPWHEEL DRIVER AND METHOD OF ATTACHMENT
TO OBTAIN UNIQUE PROPERTIES

CROSS REFERENCE TO RELATED APPLICATION

This application is a continuation in part of application serial number 09/309,640 filed May 11, 1999 entitled Gripwheel Driver Assembly and Method Of Use.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to devices by which Driver Tools are actuated and handled.

2. Description of Prior Art

Ratchet Drivers are designed to eliminate both the need for disengaging from a fastener to return for another leg of spinning a driver tool's handle and the need for reconfiguring the grip to begin application of another spin of the driver's handle, operations necessary for rotation of a fastener in absence of a ratcheting mechanism. By eliminating the aforementioned operations, the time saved can be applied to just rocking the driver's handle back and forth with the hand, thereby increasing the number of rotational cycles and speeding rotation of the fastener. However, due to the fact that many fasteners are not snug enough to generate the frictional resistance required to cause the ratchet mechanism to ratchet, the opposing hand must, at times, be used to supply the additional frictional resistance. When a means is not provided to keep the hand poised in readiness while waiting to apply the resistance, applied only during return strokes, the hand must continually reconfigure on each successive cycle to correctly apply the added resistance, thus consuming much of the time saved by using the ratchet driver. If it becomes necessary for the fastener's spin to be reversed for any reason, the user must stop, reset the ratchet mechanism

18 for reverse, spin the fastener, then stop, reset the ratchet mechanism for forward, and resume
19 operation; the resetting of the mechanism wastes an additional period of time. Furthermore, since
20 the hand which is already positioned on the side of the driver's shank to apply the additional
21 resistance, could, but being it lacks an efficient means to engage the shank and therefore cannot
22 effectively continue spinning of the fastener, the return cycle is left unproductive and its potential
23 not fully realized. In addition, when a hand grips the shank from a location on side the shank to
24 spin the shank, it is not quite in spacial orientation such that it can rotate a distance equal to the
25 distance rotated by a hand gripping on a driver handle at rear of the driver, a rotating ratio of two
26 to three. Therefore a driver would benefit from an attached component devised so that the user's
27 hand could act a role of clutch mechanism which normally is needed as part of the tool in order to
28 have the tool's shaft move easily within the hand to achieve an alternating two handed continuous
29 spin of the shank. Having such an attachment would free tool space permitting installation of,
30 plus offer as platform to support, a means for stepping up the movement of the shank relative the
31 movement of a hand which, while positioned along side the shank, spins the shank. Finally, since
32 rocking the driver's rear-handle back and forth makes it difficult to hold the tool steady upon a
33 fastener, the tool would benefit from an efficient means to guide the fore-portion of the tool
34 against the work while operating the tool.

1 SUMMARY OF THE INVENTION

2 It is therefore an object of the invention to equip a driver tool, a tool having both a handle
3 and shank extending perpendicularly from the handle, with a handle assembly used as both a
4 second-handle, for spinning the driver's shank, and a guide means, used to aid in guidance of
5 both the driver-tool and operating hand. The assembly is comprised of two separate shaped,
6 positioned, utilized, and functioning halves, a discrete slip ring type hand-held-guide and a hand-

7 operated driver-shank's drive-means called a drive-wheel herein. Both halves being attached
8 upon the tool utilizing a method of attachment prescribed herein to enable a one portion of a hand
9 grasping upon the guide half of the assembly to direct the tool's shank toward work and, through
10 way of the gripping upon the guide, secure the one hand portion both linearly fixed relative plus
11 rotatable relative the shank as axis, and thereby position an unencumbered second portion of the
12 hand to simultaneously, at will, grasp for holding or grasp for spinning the hand-operated drive-
13 wheel-half of the assembly; and in addition through the grasp of the drive-wheel also enable the
14 drive-wheel to (1)be means for the hand's second portion to aid in guidance of the tool; (2)be
15 means for the hand's second portion to supply additional frictional resistance for augmenting
16 ratcheting of the driver when the driver is a ratchet type applied to loose-fitted-work; (3)be means
17 for the hand's second portion to reverse the spin of the driver's shank without having to reset the
18 ratcheting direction of the driver and; (4)be means for the hand's second portion to continue
19 productive spinning of a fastener during the opposing hand's unproductive driver-handle return
20 strokes. To accomplish the aforementioned results the said guide and drive-wheel are structured
21 as two separate shaped, positioned, utilized, and functioning halves, both components structured
22 and sized such that the distance from at lease one axially-parallel-outward-surface of the guide to
23 axis of the guide is essentially the same as the distance from the overall axially parallel outward
24 surface of the drive-wheel to axis of the drive-wheel, the driver-tool's shank being used as the
25 axis, and both components are sized so that their widths, as placed adjacent in line on the shank
26 as axis, are such that a hand is able to grasp the two components simultaneously, and the hand-
27 held-guide's shank-parallel outward-surface is shaped to enable holding in position on the guide
28 any one portion of a hand grasping on the-shank- parallel-outward-surface of the said guide,
29 while the drive-wheel's shank-parallel-outward-surface is shaped for ease of being,

30 simultaneously along with holding of the guide by a one portion of a hand, intermittently gripped,
31 held, spun, and released by the grasp of any second, remaining not utilized on the guide, portion
32 of the same said hand; and additionally, the drive-wheel being a separate utilized and functioning
33 half of the assembly, is shaped with bluntly curved surfaces substantially uniformly symmetrical
34 about the axis of the wheel, to enable the wheel to rotate within the grasp of a releasing, not-
35 utilized-on-the-guide, second portion of the said hand, such that the, not-utilized-on-the-guide,
36 second portion of the said hand is able to remain in a positioning for gripping the drive-wheel,
37 and yet also is able to rotate about the drive-wheel near or lightly touching the drive-wheel's
38 surface due to anchoring through linkage with the said hand's one portion which remains utilizing
39 the guide, the guide in addition being discretely freely rotatable. The assembly's method of
40 attachment comprises, having the slip ring type hand-held-guide slipped into place "loosely
41 discretely girdling the shank of the driver-tool and separate the drive-wheel to result in the
42 guide's being freely, discretely separately able to spin, unlimited in distance and direction,
43 including relative both the driver's shank as axis for the spin and the assembly's drive-wheel as a
44 separate utilized and functioning half of the assembly, the attachment being by having the shank
45 inserted through a bore", larger in diameter than the shank and piercing through the guide, to a
46 distance on the shank from the shank's work end, such that the guide is girdling rearward of in
47 line with the shank's work end, the guide being retained in the guide's location on the shank; and
48 the location on the shank the guide girdles is also in line forward the work side of the drive-
49 wheel, the drive-wheel being located ringing to encircle the shank but "utilizing a manner of
50 engaging upon the shank" to spin the shank, the location the wheel is ringing on the shank being
51 even further in line rearward on the shank than the guide's location from the work end of the
52 shank, the wheel being retained in the wheel's location on the shank; and the location on the

53 shank which the wheel rings is also in line forward the work end of the driver's handle, the work
54 end of the driver's handle being the fore-portion of the handle, the handle being a part of the
55 driver-tool which is attached engaging upon and in line with the rear end of the tool's shank, the
56 opposite shank-end from the tool's work end, to spin the shank, thus the driver's handle is in line
57 rearward the drive-wheel, the drive-wheel is in turn, in line rearward the guide, and the guide is in
58 turn, in line rearward the work end of the shank; and both the gripwheel halves, the guide and
59 wheel, are attached advantageously positioned near enough each other between the fore-portion
60 of the driver's handle and the tool's work end, such that a single hand is able to simultaneously
61 grasp both the guide and drive-wheel utilizing them as bilaterally supporting halves. At least one
62 retainer is placed, a retainer in front of the hand-held-guide, to help retain the components in
63 assembled operating position. The manner of the wheel's engagement with the shank to spin the
64 shank can be in either one of two ways, one by having the wheel ring the shank so as to encircle
65 fixed to the shank or two by having the wheel ring the shank rotatable relative the shank by
66 inserting the shank loosely fitting through a bore piercing through the drive-wheel while the
67 wheel is also dressed to engage the shank by way of linkage through a drive-train to spin the
68 shank. The means utilized to effect the drive-wheel's engagement with the shank can be of any
69 type including 1, having the shank's outside surface expanded and reshaped to form the drive-
70 wheel component, by 2, dressing the inner surface of a bore through the drive-wheel with means
71 which causes the wheel to grip the shank's surface so that the drive-wheel can have the shank
72 inserted through the bore with the means causing the shank to be fixed to the wheel, or by 3,
73 having a geared-internal-drive-train attached to the wheel and linking the wheel so to engage the
74 shank, the train comprised of a loosely girdling the shank beveled-driving-gear centered and fixed
75 to the drive-wheel's internal face, the driving-gear's teeth engaging a beveled-idler-gear able to

76 spin being mounted at its center on an axle affixed to the driver handle's fore-portion, the same
77 beveled-idler-gear having its teeth engaging a step-up-beveled-gear able to spin being mounted at
78 its center on an axle affixed to the driver handle's fore-portion, the step-up-beveled-gear engaging
79 a ringing the shank while engaging the shank driven-gear; and the aforementioned gearing
80 arrangement can be repeated in bilaterally symmetrical fashion on the shank's opposite side.

81 Such a drive-train would be for increasing the speed of the shank's spin relative the speed of the
82 drive-wheel's spin, thus compensating for any difference in the ability of one hand to spin the
83 drive-wheel versus the other hand to spin the driver's rear-handle, a difference due to spacial
84 orientation. The manner of guide's being freely, discretely separately able to spin, unlimited in
85 distance and direction, including relative both the driver's shank and the assembly's drive-wheel,
86 can be in either one of two ways, having a bore through the guide sized so that the shank can be
87 directly inserted loosely fitted through the bore immediately relative the guide, the shank thereby
88 acting as axle for the guide which, being a discretely separate component, is thus freely,
89 discretely separately, able to spin unlimited in distance and direction relative the driver's shank
90 and the assembly's drive-wheel; or the guide can also be freely, discretely separately able to spin
91 relative the shank and drive-wheel, by having another component inserted loosely fitted through
92 the guide's bore, the other component in turn ringing the shank to encircle the shank. As for
93 example, the bore could be sized so that an extension of the drive-wheel's hub can be inserted
94 loosely fitted into the guide's bore, the drive-wheel's hub would then act as axle for the guide, the
95 guide being a discretely separate component is thus freely, discretely separately able to spin
96 relative the hub; however, the shank inserted through the hub also enables the guide to be freely,
97 discretely separately able to spin as relative the driver's shank, plus the wheel's hub, along with
98 the drive-wheel, the wheel being a separate utilized half of the assembly unitized with the hub.

99 Although the manner of attaching the guide to a tool can be either one of the two ways, the means
100 to effect the attachment as such can be only one, that is by having the guide rotationally
101 unengaged, either directly and or by linkage, with the shank.

102 As heretofore described the invention provides the driver tool with a second handle that
103 is both a guide and second drive-means combined in an assembly form for handling the said
104 tool more efficiently, augmenting operation of the said tool, and increasing the distance the
105 tool's shaft can be turned during application cycles. The assembly's capability of providing as
106 such being due to having the two separate yet bilaterally supporting halves, the forward half of
107 the handle assembly, being the slip ring type hand-held-guide which is attached to spin discretely
108 freely about the tool's shank, and the rear half of the handle assembly, being the hand-operated-
109 drive-wheel which is attached to engage the shank for holding or spinning the shank, Both
110 halves securely positioned location fixed relative a driver-tools shank and configured to be
111 separately yet simultaneously utilized by a single hand.

112 A preferred method of operating the assembly while attached upon a driver tool would be to
113 have a user clutch the slip ring type hand-held-guide between a thumb and at least one finger of a
114 hand to direct the tool's shank against work and, as needed, simultaneously bear down with the
115 free portions of the same hand to grasp and hold or grasp and spin the shank-engaged, hand-
116 operated drive-wheel for holding or spinning the shank. The grasping and holding or grasping
117 and spinning may be timed to occur during return strokes of the user's other hand which operates
118 the driver's handle. Clutching the hand-held-guide by a portion of a hand to guide the shank also
119 serves to hold the unencumbered portions of the same hand in a position to utilize the drive-
120 wheel. The assembly in whole form is effective for augmenting the ratcheting of a ratchet driver
121 applied to loose fitted work, via the grasping and holding of the hand operated drive-wheel when

122 holding is timed to occur during return strokes of the driver's handle. But additionally, the
123 assembly can be used with any driver fitted with the invention, to further spin the driver's shank
124 during application cycles, through spinning the hand operated drive-wheel on normally
125 unproductive return-stroke-periods of the driver's-handle.

1 BRIEF DESCRIPTION OF THE DRAWINGS

2 In the drawings identical components are identified with identical reference numbers and
3 lettering:

4 FIG. 1 is an exploded perspective side view of the gripwheel driver assembly, the present
5 invention. The figure illustrates shapes which can be used for the slip ring type hand-held-guide
6 and hand operated drive-wheel which fall within the scope of the invention as described. The
7 figure also helps illustrate that the method of attaching the guide half the assembly, the method
8 being to have the guide loosely discretely girdling the shank of a driver-tool while separate the
9 drive-wheel to result in the guide's being freely, discretely separately able to spin, unlimited in
10 distance and direction, including relative both the driver's shank used as the axis for the spin and
11 the drive-wheel being a separate utilized half of the assembly, can be accomplished by either one
12 of two manners, the manner in FIG. 1 being by having the slip ring type hand-held-guide loosely
13 discretely girdling the shank of the driver-tool, immediately relative the shank, through way of a
14 bore through the guide sized so that the shank can be directly inserted loosely fitted through the
15 bore, the specific means used to effect the guide's spinning freely as said being, as there is only
16 one, is to have the guide rotationally unengaged in every way relative the shank while linearly
17 fixed in position relative the shank. The FIG. 1 also helps illustrate that the method of attaching

18 the drive-wheel half the assembly, the method being to have the drive-wheel ringing so encircling
19 to engage to spin the shank, can be by either one of two manners, the manner in FIG. 1 being to
20 ring the shank fixed to the shank thus engaging the shank, the specific means utilized in the FIG.
21 1 to effect said engagement being to have the wheel fixed to the shank by jagged surface ridges
22 inside a bore piercing through the drive-wheel, the bore sized small enough for the drive-wheel to
23 be press fitted onto and ringing the shank through way of the bore, the ridges thus digging into the
24 shank's surface thereby fixing the wheel to the shank;

25 FIG. 2 is an exploded perspective side view of the gripwheel driver assembly, the present
26 invention, illustrating the alternate manner to that illustrated in FIG. 1 of having the slip ring type
27 hand-held-guide loosely girdle a driver's shank, immediately relative the shank, and separate the
28 assembly's drive-wheel to result in the guide's being freely, discretely separately able to spin,
29 unlimited in distance and direction, including relative both the driver's shank, as axis for the spin,
30 and the drive-wheel, being a separate utilized half of the assembly, the alternate manner being to
31 loosely girdle the shank through way of loosely girdling another component ringing the shank,
32 Also illustrated in FIG. 2 is the attachment method of the drive-wheel along with one of the two
33 possible alternate engagement manners, the engagement manner illustrated in FIG. 2 being the
34 same 15a manner as utilized in FIG. 1, but the specific means utilized to effect engagement,
35 while similar to FIG.1, differs from FIG. 1 by incorporating a unitized construction of the drive-
36 wheel 14 with a hub 18 as part of the means;

37 FIG. 3 is an external side plan perspective view of the gripwheel driver assembly as
38 depicted in either FIG. 1 or FIG. 2 but in FIG. 3 the gripwheel device is shown assembled
39 rather than exploded;

FIG. 4 is a partial cross sectional front view of the gripwheel driver assembly of FIG. 2 with the embodiment placed ready for operation attached on a phantom outlined portion of a driver tool. The figure reveals the assembly's drive-wheel engaging a shank by manner in which the drive-wheel had been dressed to do so in FIGURES 1 and 2;

FIG. 5A is a partial cross sectional front view of the gripwheel driver assembly of FIG. 2 with the embodiment placed ready for operation mounted on a phantom outlined portion of a driver tool, but differs from FIGURES 2 and 4 by using the alternate manner to that illustrated in FIG. 1 of having the hand-operated-drive-wheel 14 ringing to encircle-engaged with so to spin a shank, the alternate manner being engagement through linkage by a drive-train 15b in lieu of engagement by means of being fixed to the shank 15a, the means utilized in FIG. 5A to engage the shank being a-geared-internal-drive-train;

FIG. 5 b is a partial-cross-section side view of the driver's rear-handle-fore-portion 25 depicted in the FIG. 5A front view and reveals the outside housing 40 of the fore-portion 25 plus the section that was cutaway, the cutaway section is still shown but in phantom; and the figure also reveals the other of the two alternate manners of attaching the drive-wheel used along with the method of attaching the wheel, the specific manner illustrated in FIG. 5 b being attaching the wheel, in accordance with the method of having the wheel ring to encircle-engaged with a driver's shank, by the manner of linkage using a drive-train for spinning the shank, the specific means utilized to effect the engagement being a geared-internal-drive-train; but also note that FIG. 5b illustrates only components used in attachment of an assembly's drive-wheel, none are intrinsic parts of the assembly itself;

FIG. 6, shows a side plan perspective view of the gripwheel driver assembly as depicted in

62 either FIG. 2, FIG. 4, or FIG. 5A but in FIG. 6 the assembly is attached on a driver-tool along
63 with both alternate embodiments of the tool's rear-driver-handle-fore-portion 25 of FIG. 4 and 25
64 of FIG. 5A, one driver's handle fore-portion embodiment is used with the assembly's drive-wheel
65 engaging the shank through utilizing the manner of fixing the wheel to the shank and the other
66 embodiment is used with the assembly's drive-wheel engaging the shank through utilizing the
67 manner of a drive train, both fore portions being depicted in phantom, one superimposed over the
68 other, while they are attached to the rest of a driver's handle 27 shown in phantom;

69 FIG. 7 is a side plan view of a gripwheel driver assembly mounted on a driver tool and illustrates
70 both the work end of the tool and the operating end of the tool plus reveals that the work end of
71 the tool is also the work end of the driver-tool's shank, also the FIG. 7 illustrates the work end of
72 the shank as the free end of the shank; additionally, the figure illustrates that the operating end of
73 the tool is the operating end of the driver-tool's handle;

74 FIG. 8 is a bottom plan perspective view of the gripwheel driver assembly shown isolated
75 from a driver tool and reveals both the internal face 32 of the drive-wheel 14 and a bore 31
76 through the drive-wheel;

77 FIG. 9 is a top plan perspective view of the gripwheel driver assembly shown isolated from
78 a driver tool and reveals a bore 30 through the guide;

79 FIG. 10 is a side plan exploded view of the gripwheel driver assembly illustrating the slip
80 ring type hand-held-guide 13 being slipped into place loosely discretely girdling the shank 33 of a
81 driver-tool;

82 FIG. 11 is a side plan view of a preferred type ratchet driver tool of genre having a handle
83 with a shank extending perpendicularly from the handle, and is the type to which a gripwheel

84 driver assembly would be attached, the tool being shown isolated from the gripwheel driver
85 assembly, and

86 FIG. 12 is a sequence of side plan views revealing the recommended hand operations for
87 utilizing the gripwheel driver assembly as mounted on a driver tool and includes arrows denoting
88 the direction of forces applied to both the assembly and through the assembly to the tool.

1 DETAILED DESCRIPTION OF THE INVENTION AND
2 METHOD OF ATTACHMENT

3 FIG. 1 an exploded perspective side view of the gripwheel driver assembly, the present
4 invention, shows both assembly halves, the slip ring type hand-held-guide half 13 and the hand
5 operated drive-wheel half 14. As FIG. 1 illustrates, the guide 13 and drive-wheel 14 are structured
6 as two separate, positioned, utilized, and functioning components sized such that the distance
7 from at least one axially-parallel-outward-surface of the guide to axis of the guide is essentially
8 the same as the distance from the overall axially parallel outward surface of the drive-wheel to
9 axis of the drive-wheel, the driver-tool's shank being used as the axis, and both components are
10 sized so that their widths, as placed in line on the shank as axis, are such that a hand is able to
11 grasp the two components simultaneously, and the hand-held-guide's shank-parallel-outward-
12 surface, illustrated in FIG. 1 by showing the guide's shank parallel outward surface concavely
13 shaped and sharply curved, is shaped to enable holding in position on the guide 13 any one portion
14 of a hand-grasping-on-the-shank- parallel-outward-surface of the said guide 13, while the
15 drive-wheel's shank-parallel-outward-surface is shaped for ease of being, simultaneously along
16 with the holding of the guide 13 by a one portion of a hand, intermittently gripped, held, spun,
17 and released by the grasp of any second, remaining not utilized on the guide, portion of the same

18 said hand, illustrated in the FIG. 1 by showing the wheel's shank parallel outward surface
19 convexly shaped and bluntly curved; and additionally, the drive-wheel 14 being a separate
20 utilized and functioning half of the assembly, is shaped with bluntly curved surfaces substantially
21 uniformly symmetrical about the axis of the wheel, to enable the wheel to rotate within the grasp
22 of the releasing, not-utilized-on-the-guide, second portion of the said hand such that the, not-
23 utilized-on-the-guide, second portion of the said hand is able to remain in a positioning for
24 gripping the drive-wheel, and yet also is able to rotate about the drive-wheel near or lightly
25 touching the drive-wheel's surface due to anchoring through linkage with the said hand's one
26 portion which remains utilizing the guide, the guide in addition being discretely freely-rotatable.
27 And also the FIG. 1 helps illustrate that the guide 13 can be attached by method of loosely
28 discretely girdling a driver-tool's shank, the guide freely, discretely separately able to spin,
29 unlimited in distance and direction, including relative the driver's shank as axis for the spin, and
30 assembly's drive-wheel as a separately utilized half of the assembly, by using one of two manners
31 in which the guide could be attached as said, the manner in the FIG. 1 being to have the hand-
32 held-guide, by way of a bore 30 through the guide with diameter large enough to permit the shank
33 to be inserted loosely fitted through the bore, loosely girdle immediately relative of, so to spin
34 directly upon the shank as an axil, the means utilized regardless of manner, as there is only one
35 means, is to have the guide rotationally unengaged with the shank in all ways while linearly fixed
36 relative the shank. And lastly the FIG. 1 also helps to illustrate that the hand operated drive-
37 wheel 14 can be attached on a driver's shank by the method of engaging the shank to spin the
38 shank through using one of two manners in which the drive-wheel could be attached as said, the
39 specific manner used in FIG. 1 being the manner of fixed to the shank to engage for spinning the

40 shank, the means utilized to effect the engagement as said being means of jagged ridges inside a
41 bore 15a through the drive-wheel, the bore being sized small enough for the shank to be tightly
42 press fitted through the bore, the jagged ridges thus digging into the shank's surface thereby
43 fixing the wheel to the shank. Such direct engagement for the drive-wheel enables the wheel to
44 directly spin the shank upon rotation of the wheel.

45 FIG. 2 another exploded perspective side view of the gripwheel driver assembly, the
46 present invention, illustrates the alternate manner to that illustrated in FIG. 1 of having the guide
47 loosely discretely girdle a driver's shank, immediately relative the shank, and separate the
48 assembly's drive-wheel to result in the guide's being freely discretely separately able to spin,
49 unlimited in distance and direction, including relative both the said driver's shank being axis for
50 the spin, and the assembly's drive-wheel 14 being a separate utilized and functioning half of the
51 assembly, the manner being to have the guide loosely girdling the shank through way of loosely
52 girdling another component that is ringing the shank, illustrated in FIG. 2 by having the drive-
53 wheel's hub extended, the hub-extension 18 inserted through a bore 30 sized through the guide 13
54 such that the hub 18 extends loosely fitted through the bore 30, the guide thereby loosely girdles
55 the driver's hub freely, discretely separately, able to spin, unlimited in distance and direction
56 relative the hub 18, but the hub 18 in turn will be attached ringing a driver's shank to encircle the
57 shank, as illustrated in the FIG. 2, by having a bore through the hub to be used for insertion of a
58 driver's shank, the guide thereby, through way of the shank's insertion through the hub, will
59 loosely discretely girdle the shank, the guide freely, discretely separately able to spin, unlimited
60 in distance and direction, including relative the driver's shank being axis for the spin and the
61 assembly's drive-wheel being a separate utilized and functioning half of the assembly, the

62 specific means used to effect the guide's being freely spinning as said, regardless of the
63 attachment manner, as there is only one means is to have the guide unengaged to the shank in all
64 ways while linearly fixed relative the shank. Also, the FIG. 2 illustrates the attachment method of
65 the drive-wheel, which is to have the drive-wheel ring the shank, encircling-engaged with, to spin
66 the shank; and the manner to engage the shank, one of two manners which can be utilized, the
67 manner illustrated in FIG. 2 being the same manner as illustrated in FIG. 1, that being to engage
68 the shank by way of fixing the wheel to the shank to spin the shank, but the specific means
69 utilized to effect engagement as said, while similar to figure one, differs from FIG. 1 by making
70 use of a unitized construction of the wheel and hub, the hub being fixed to the shank in lieu of the
71 wheel, but the hub uses the same manner and means of the wheel's engagement in FIG. 1, the
72 manner being having a bore piercing through the hub, the means being surface ridges inside the
73 bore and the bore sized small enough to be press fitted tightly onto a shank thereby causing the
74 ridges to dig into the shank's surface thus fixing both the hub and the hub's interconnected wheel
75 to the shank. A cut away of the hub illustrates the shank engagement means 15a.

76 FIG. 3 an external side plan perspective view of the gripwheel driver assembly shows
77 the gripwheel of either FIG. 1 or FIG. 2, as assembled and ready for attachment to a driver tool.
78 As illustrated in figure 3, when either the gripwheel assembly of FIG. 1 or FIG. 2 is assembled
79 for use on a tool as in FIG. 3, both figures depict the same gripwheel form, configuration, overall
80 structure, and, barring the physical elements used to attach the assembly 30 FIGURES 1 and 2;
81 15a of figures 1, 2, and 4; 16 of FIGURES 1 and 4; 17 of FIGURES 2, and 4; 15 D of FIG. 5A,
82 the same basic attachment method, that of attaching the slip-ring-type-hand-held-guide half the
83 assembly to loosely girdling the shank of a driver-tool, the guide being discretely separately

84 adjacent, in line forward of the drive-wheel, and reward of the driver-shank's work end, such that
85 the guide is freely, discretely separately able to spin, unlimited in distance and direction,
86 including relative both the driver-tool's shank and the assembly's drive-wheel; and, attaching the
87 other half the assembly, the hand-operated-drive-wheel, adjacent in line rearward of the guide,
88 forward of a driver's handle, and girdling while engaging the shank, such that the shank will spin
89 with spinning the wheel but the guide spins separate.

90 FIG. 4, containing a partial cross sectional front view of the gripwheel driver assembly of
91 FIG. 2, shows the assembly placed ready for operation mounted on a phantom outlined portion of
92 a driver tool. As illustrated in the FIG. 4, the required area-on-the-tool's shank 33 which is
93 utilized for the device to function is between the driver-handle's fore-portion 25 and the work end
94 of the shank, the work end of the shank in FIG. 4 shown as the free end of the shank 33. As also
95 illustrated, the hand-operated-drive-wheel 14 using a direct engaging means, 15a, fixes the drive-
96 wheel to the shank 33, and the hand-held-guide 13, being attached discretely, separately, loosely
97 girdling the shank, is thus able to be spun separately from the drive-wheel and shank. Also
98 illustrated in FIG. 4, when the drive-wheel utilizes a means to engage the shank by being fixed to
99 the shank, the engagement doesn't require involvement with the driver-handle's fore-portion 25.

100 FIG. 5A, a partial cross sectional front view of the gripwheel driver assembly of FIG. 2
101 has the assembly attached ready for operation on a phantom outlined portion of a driver-tool, but
102 while FIGURES 1, 2, and 4 illustrate the manner of the drive-wheel's engagement with shank to
103 spin the shank as being by way of fixing the wheel to the shank, the FIG. 5A illustrates the other
104 of the two alternate manners of having the hand-operated-drive-wheel 14 attached in according
105 with the method of ringing to encircle-engaged with a shank to spin the said shank, the alternate

manner being to engage the shank by linkage through way of a drive-train, the specific means utilized in FIG. 5A to effect engagement as said is by using a geared-internal-drive-train 15b in lieu of being fixed to the shank by being pressed tightly onto a shank while having surface ridges fixed to the wheel to dig into the shank's surface thereby fixing the wheel to the shank 15a. As the FIG. 5A illustrates, the preferred component parts of a geared-internal-drive-train would be the following: a driving-gear 20 directly-engaging and therewith fixed 15a to the internal face of the hand operated drive-wheel 14; an idler-gear 21 engaging with the driving-gear 20; a step-up-gear 22 engaging with the idler-gear 21; a driven-gear 23 which is both engaging the step-up-gear 22 and ringing to encircle engaged with and thus fixed 15c to the tool's shank; and the gearing arrangement 24 which is a repeat of 21-22 in bilateral symmetrical fashion. Also illustrated in FIG. 5A and differing from figure 4, the driver-handle's fore-portion 25, due to the drive-train's involvement with the handle fore portion, is configured to have the gears of the drive-train 15b able to spin while mounted on axils affixed to the driver handle's fore-portion.

FIG. 5 b, a partial-cross-section side view of the driver's rear-handle-fore-portion 25 which was depicted in the FIG. 5A front view, reveals the outside housing 40 of the fore-portion 25 and the section that was cutaway, the cutaway section still shown but in phantom; also the figure reveals the other of the two alternate manners of attaching the drive-wheel which is used along with the method of attaching the wheel, the specific manner illustrated in FIG. 5 b being attaching the wheel, in accordance with the method of having the wheel ring to encircle-engaged with a driver's shank, by the manner of linkage using a drive-train for spinning the shank, the specific means utilized to effect the engagement being a geared-internal-drive-train; the figure additionally reveals that the driver-handle's housing 40 can wrap behind the step-up-gear 22 for

128 use as a platform to mount the idler gear 21, but note that the FIG. 5 b illustrates only
129 components used in the attachment of an assembly's drive-wheel and none are intrinsic parts of
130 the assembly itself.

131 FIG. 6, a side plan perspective view of the gripwheel assembly shown in either FIGURES
132 1, 2, 3, 4, or 5A illustrates the assembly attached on a phantom outline of a driver tool having
133 both alternate embodiments of the rear-driver-handle-fore-portion 25 of FIG. 4 and 25 of FIG. 5A
134 in phantom, one superimposed over the other, while they are attached to the rest of a driver's
135 rear-handle 27 shown in phantom. As illustrated by FIG. 6, all the embodiments, FIGURES 1,
136 2, 3, 4, and 5A of the gripwheel assembly assembled and attached on a tool have essentially the
137 same form, configuration, structure, and, barring the physical elements used to attach the
138 assembly 30 FIGURES 1 and 2; 15a of figures 1, 2, and 4; 16 of FIGURES 1 and 4; 17 of
139 FIGURES 2, and 4; 15 D of FIG. 5A, the same attachment method, that of attaching the slip-
140 ring-type-hand-held-guide to loosely girdling the shank of a tool discretely separately adjacent in
141 line forward of the drive-wheel and reward of the driver-shank's work end, such that the guide is
142 freely, discretely separately able to spin, unlimited in distance and direction, including relative
143 both the driver's shank and the assembly's drive-wheel; and also attaching the hand-operated-
144 drive-wheel, other half the assembly, separately adjacent in line, rearward of the guide, forward
145 of a driver's handle, and girdling while engaging the shank, such that the shank will spin with
146 spinning of the wheel but the guide spins separate. Also illustrated in FIG. 6 is a ratchet driver
147 direction setting means, 26 shown in phantom, but the setting means has no mechanical bearing
148 on the gripwheel handle assembly.

149 FIG. 7, a side plan view of a gripwheel driver assembly mounted on a driver tool illustrates

150 both the work end 28 and operating end 29 of the tool plus reveals that the work end of the tool is
151 also the work end of the driver-tool's shank 33, also the FIG. 7 illustrates the work end of the
152 shank 33 as the free end of the shank 33. Additionally, the figure illustrates that operating end of
153 the tool is the operating end of the driver-tool's handle. Orientation of the gripwheel's
154 component parts relative the tool's work end 28 and operating end 29 is also revealed.

155 FIG. 8 a bottom plan perspective view of the gripwheel driver assembly, shown isolated
156 from a driver tool, reveals the internal face 32 of the drive-wheel and a bore 31 through the
157 wheel. The bore 31 is one means which can be used for the drive-wheel to be attached ringing a
158 driver-tool's shank encircling to be engaged with the said shank, the means being having the
159 wheel's bore sized for insertion of the driver's shank while the wheel is also dressed to engage
160 the shank as 15a of FIG. 4 or 15 D of FIG. 5A.

161 FIG. 9 a top plan perspective view of the gripwheel driver assembly, shown isolated from a
162 driver tool, reveals a bore 30 in the slip ring type hand-held-guide. The bore is one means which
163 could be used for the guide to be attached loosely girdling the shank of the tool and separate the
164 drive wheel to result in the guide's being freely, discretely separately able to spin, unlimited in
165 distance and direction, including relative both the driver's shank and the assembly's drive-wheel,
166 the means being having the guide's bore sized large enough for having the shank inserted loosely
167 fitted through the bore such that the guide is discretely separately freely able to rotate about the
168 driver's shank.

169 FIG. 10, a side plan exploded view of the gripwheel driver assembly is depicting the
170 method of attaching the gripwheel components to a driver tool. As FIG. 10 illustrates, the slip
171 ring type hand-held-guide 13 is slipped into place loosely discretely girdling the shank of the

172 driver-tool and separate the assembly's drive-wheel 14 by a method resulting in the guide's being
173 freely, discretely separately able to spin, unlimited in distance and direction, including relative
174 both the driver's shank 33 used as axis for the spin and the assembly's drive-wheel 14, as being a
175 separate utilized and functioning half of the assembly. The method illustrated is by inserting the
176 shank 33 through a bore 30, larger in diameter than the shank and piercing through the guide 13,
177 to a distance on the shank from the shank's work end 28 FIG. 7 such that the guide is girdling
178 rearward of in line with the shank's work end 28, the guide being retained in the guide's location
179 on the shank; and the location on the shank the guide girdles is also in line forward the work side
180 of the drive-wheel 14, the drive-wheel located ringing to encircle the shank but "utilizing a
181 manner of engaging upon the shank 33" to spin the shank 33, the location the wheel is ringing on
182 the shank being even further in line rearward on the shank than the guide's location from the
183 work end 28 of the shank, the wheel being retained in the wheel's location on the shank; and the
184 location on the shank which the wheel rings is also in line forward the work end of the driver's
185 handle, the work-end of the driver's handle being the fore-portion 25 of the handle, the handle
186 being a part of the tool which is attached engaging upon and in line with the rear end of the tool's
187 shank 33, the opposite shank-end from the tool's work end 28 FIG. 7 to spin the shank 33, thus
188 the driver's handle is in line rearward the drive-wheel 14, the drive-wheel is in turn, in line
189 rearward the guide 13, and the guide is in turn, in line rearward the work end of the shank; and
190 both the gripwheel halves, the guide and wheel, are attached advantageously positioned near
191 enough each other between the fore portion of the driver's handle 25 and the tool's work end,
192 such that a single hand is able to simultaneously grasp both the guide and drive-wheel utilizing
193 them as bilaterally supporting halves.

194 FIG. 11, a side plan view of a preferred type driver tool of the genre having a handle and a
195 shank extending perpendicularly from the handle and being of the type which a gripwheel driver
196 assembly would be attached, shows the tool isolated from the assembly.

197 FIG. 12, a sequence of side plan views, shows the recommended hand operations for
198 utilization of the gripwheel driver assembly as mounted on a driver tool. The FIG. 12 reveals
199 the preferred hand positions and motions of the hand upon and about the assembly as relative the
200 driver-tool, and the figure also includes arrows denoting direction of forces applied by the hand
201 to the assembly and through the assembly to the tool.

202 Referring now to FIGURES 1, 2, 4, 5A, 6 and 11, the gripwheel driver assembly, as in
203 FIGURES 1 and 2, being a means for guiding and actuating, comprises a slip ring type hand-held-
204 guide-half 13 and a hand-operated drive-wheel-half 14, each used in conjunction with the other,
205 both attached as the assembly to a driver-tool of the genre of type show in FIG. 11, such that the
206 assembly is located between the 28 FIG. 6 work end of the driver tool's shank 33 FIG. 6 and the
207 work end of the driver-handle's fore-portion, for example 25 FIG. 6 of driver tool handle 27 in
208 FIG. 6. The hand-held-guide half 13 FIG.10 of the assembly is attached to the driver-tool by
209 method of loosely girdling the shank 33 FIG.10 of the tool and separate while nearer the tool's
210 work end 28 FIG. 10 than the drive-wheel half the assembly 14 FIG. 10, such that the guide 13
211 FIG 10 is freely, discretely separately able to spin, unlimited in distance and direction, including
212 relative both the driver's shank 33 and the assembly's drive-wheel 14, and the manner of being
213 attached as said is either by directly loosely girdling immediately relative the shank, or loosely
214 girdling the shank by way of loosely girdling another component18 FIG. 2 which rings the shank,
215 and the means utilized to effect being freely able to spin separate is that of having the guide

216 rotationally unengaged in any way with the shank while linearly fixed relative the shank. The
217 drive-wheel 14 is attached to the driver-tool by method of ringing the shank 33 while rearward
218 the guide's location from the shank's work end, such that the wheel is ringing the shank to
219 encircle-engaged with to spin the shank 33 either in the manner of directly engaging the shank or
220 engaging the shank through manner of linkage by way of a drive train, the means utilized to effect
221 the wheel's engagement being any of several available, one for example being a jagged bore sized
222 to be press fitted about the shank 15a FIGURES 1, 2 and 4, thus engaging through being directly
223 fixed to the shank to spin said shank or another being a geared internal drive train linking the
224 fixed attachment of the drive-wheel to a driving-gear 15b with the fixed attachment of a driven-
225 gear to the shank 15c, such as the 15D drive-train in FIG. 5A , to result in the wheel engaging the
226 shank to spin the said shank. Both the guide13 and the drive wheel14 are located such that they
227 are near enough each other so that a single hand is able to utilize them simultaneously. The
228 linear movement of the guide13 relative the shank 33 is fixed by a retainer such as 16 FIG. 1 or
229 17 FIG. 2 and the linear movement of the drive-wheel 14 is also fixed relative the shank 33 either
230 by its engagement method upon the shank 33 which can fix it to the shank 33 or by its
231 positioning, as in FIG. 6, being sandwiched between the fixed position of the driver's main
232 handle fore-portion 25 and hand-held-guide 13 which is linearly fixed in position as by retainer,
233 such as 16 and17.

234 Referring now to FIGURES 7, 11 and 12, using a preferred method of operating the
235 gripwheel driver assembly, the operator would first grasp the slip ring type hand-held-guide 13
236 between a thumb and at least one finger of a hand 36, the hand one first portion 38 of FIG. 12, to
237 guide the driver's shank 33 toward the work, FIG. 12 OPERATION 1, and thereupon, the

238 operator would keep the first hand portion 38 upon the guide to use the first hand portion for
239 guiding and holding the shank against work, and at the same time the user rocks the driver's rear-
240 handle 27 FIG. 12 counter clockwise using the other hand 37 FIG. 12, the motion counter
241 clockwise being a rear handle return stroke, until the other hand reaches its maximum rotational
242 extension, FIG. 12 OPERATION 2. While the other hand 37 FIG. 12 is moving to its maximum
243 counter clockwise extension, the operator bears down and grips the hand-operated-drive-wheel 14
244 with a second portion of hand one, which remained-not-utilized-for-holding-onto-the-guide 39
245 FIG 12, to rock the drive-wheel 14 clockwise thus spinning the shank 33 clockwise, FIG. 12
246 OPERATION 2. The hand one portion 38 FIG. 12 holding onto the guide is kept on the guide
247 and continues to remain on the guide during all operations allowing the guide to fulfill another
248 role which is that of being means to anchor the hand-one 36 FIG. 12 in just such an
249 advantageous position to have the hand one's second portion not used on the guide 39 FIG. 12
250 grasp to spin as needed the shank engaged drive-wheel 14. Note that when the assembly is
251 mounted on a ratchet-driver-tool, such as the tool of FIG. 11, and the tool is used on loose fitted
252 work, just holding the drive-wheel 14 during return strokes of the rear-shank-handle 27 FIG. 7
253 will augment the ratcheting action of the driver. Spinning of the drive-wheel 14 will, on any
254 driver fitted with the assembly, further spin the shank if the spinning is applied during normally
255 unproductive return-stroke periods of the driver's rear handle 27 FIG. 7. Continuing to describe
256 the gripwheel operation, when both the operator's hands reach maximum rotated extensions in
257 their respective rotating directions, the operator would release the hand-one second-portions 39
258 FIG. 12 from gripping upon the drive-wheel, releasing the drive-wheel, FIG. 12 OPERATION 3,
259 and thereupon reverse rotation of the other hand 37 FIG. 12 gripping on the driver's rear-handle,

260 rocking the other hand clockwise, the other hand now is continuing the clockwise spin of the
261 shank by clockwise spinning the rear-handle attached to the shank. The hand one's second-
262 portion that is released away from the drive wheel 39 along with the hand one's first-portion that
263 remains on the guide 38, freely reverse direction bringing along in rotation the slip ring type
264 hand-held-guide 13 still held by the hand one first portion, and they all rock counter clockwise
265 about plus above the clockwise-moving drive-wheel which moves due to linkage by way of the
266 engagement with the shank being spun by the other hand, the shank spun by the other hand
267 through said hand's spinning of the driver's rear handle which is engaged with the shank, FIG. 12
268 OPERATION 4, both hands continuing their operations until all arrive at their maximum
269 extensions, the starting position FIG. 12 OPERATION 1. The hands then begin another cycle of
270 gripwheel plus driver-tool use.

271 Referring now to FIG. 1, FIG. 3 and FIG. 6, the method of attaching the assembly's drive-
272 wheel half 14 FIG. 3 comprises having the wheel ring a driver-tool's shank to engage the shank
273 33 FIG. 6. In using the said attachment method, the manner in which the wheel engages the
274 shank can be in either one of two ways, one being engaging the shank by being fixed to the shank,
275 as for example by using 15a FIG. 1 a jagged bore through the wheel to be press fitted about the
276 shank fixing the wheel to the shank 33 FIG. 6. However the means used to effect the wheel's
277 being fixed to the shank thus engaging the shank can be any one of many, for example another
278 means would be glue to adhere the wheel to the shank or another would be to have the shank
279 itself expanded to form the drive-wheel component. The method of attaching the assembly's slip
280 ring type hand-held-guide 13 FIG. 1 comprises having the guide girdle loosely and discretely the
281 shank of the driver-tool and separate the assembly's drive-wheel to result in the guide's being

282 freely, discretely separately able to spin, unlimited in distance and direction, including relative
283 both the driver's shank and the assembly's drive-wheel. In using the said attachment method, the
284 manner in which the guide is enabled to said spin freely can be in either one of two ways, one
285 way being to loosely girdle the shank, the guide immediately relative the shank, as for example
286 by utilizing 30 a bore through the guide for having the driver's shank inserted directly through the
287 bore loosely fitted thus the guide would be able to spin freely discretely separately upon the shank
288 as axil. However the means used to effect the guide's being able to spin freely about the shank is
289 only one, that being to have the bore unengaged, not engaged directly nor through linkage, with
290 the shank.

291 Referring now to FIGURES 5A, and 8, the second manner, other than the previously
292 mentioned manner, of having the drive-wheel engage the shank through being fixed to the shank
293 would be for the drive-wheel to engage the shank through linkage by way of a drive train, as for
294 example the 15D in FIG. 5A geared-internal-drive-train having a beveled-driving-gear 20 FIG.
295 5A, loosely girdling the shank 33 FIG. 5A, but centered and engaged, 15b FIG. 5A, upon the
296 drive-wheel's internal face 32 FIG. 8 so as to be fixed upon the wheel 14 FIG. 5A, the beveled-
297 driving-gear 20 FIG. 5A engaging a beveled-idler-gear 21 FIG. 5A able to spin by being mounted
298 at its center on an axil affixed to the driver-handle's fore-portion 25 FIG. 5A, the same beveled-
299 idler-gear 21 FIG 5A engaging a step-up-gear 22 FIG. 5A, able to be spun by being mounted at its
300 center on an axle affixed to the driver-handle's fore-portion 25 FIG. 5A, the second-beveled-step-
301 up-gear engaging a girdling-while-directly-engaged 15c Fig 5A with-the driver's-shank 33 FIG.
302 5A driven-gear 23 FIG. 5A, and the aforementioned gearing arrangement 21 thru 22 of FIG. 5A
303 can be repeated 24 of FIG. 5A in bilaterally symmetrical fashion on the shank's, driven-gear's,

304 and driving-gear's opposite side.

305 Referring now to FIG. 2, FIG. 3, and FIG. 6, the second manner, other than the previously
306 mentioned manner of having the assembly's slip ring type hand-held-guide 13 of FIG. 3 loosely
307 discretely girdle the shank of a driver-tool and separate the assembly's drive wheel 14 to result in
308 the guide's being freely, discretely separately able to spin, unlimited in distance and direction,
309 including relative the shank as axis 33 FIG. 6 and drive-wheel 14 being a separate utilized half of
310 the assembly, is to have the 30 FIG. 2 bore through the guide 13 sized large enough to be loosely
311 fitted about another component which rings to encircle the shank 33, for example the bore 30
312 through the guide 13 FIG. 2 could be sized large enough to be loosely fitted girdling an extension
313 of the drive-wheel's hub 18 FIG. 2 thereby the guide would be freely, discretely separated able to
314 spin unlimited in distance and direction relative the extension of the drive-wheel's hub 18 FIG. 2;
315 however, the hub 18 FIG. 3 having been constructed to ring a shank so to encircle engaged with
316 the shank will in turn enable the discretely attached guide 13 FIG. 2 to be freely, discretely
317 separated able spin relative the shank, relative the hub, and plus relative the hub's attached
318 wheel.

319 Referring to FIGURES 6 and 12, operation of the assembly on a ratchet driver such as
320 depicted in figure 6 remains basically the same whatever the setting of the driver's ratchet-
321 direction setting means 26 FIG. 6 as the hand is still merely lifted off the Drive-Wheel 14 FIG. 6
322 during Drive-Wheel return strokes, the hand's operating position and stance are maintained
323 during the lift via the anchoring of the hand by the gripping of the hand's one portion upon the slip
324 ring type hand-held-guide 13 FIG. 6. The hand-held-guide 13 FIG. 6 supports the hand lifting
325 plus return stroke operation through having been mounted rotationally free yet linearly fixed